

between what he calls *funerea purpurascens* and *chalybeata orientalis*. He notes that males from Usumbura, otherwise agreeing with *orientalis*, have rather brownish primaries. Moreover in East Africa birds with a purplish gloss but melanised primaries occur so that the possibility that only green birds are affected by this character seems to fall away. I have examined males of *orientalis* from Bagamoyo and the Amala river which agree well with white billed *amauropteryx* and whose blackish primaries can be matched with individuals from further south. In view of the overlap in characters it is very difficult to believe that *orientalis* is in fact a form of another species.

Further evidence against regarding the blackness of the primaries as a specific character (as distinct from perhaps having significance as geographical variation) is provided by Serle's collection from south-east Nigeria. He obtained 31 males assigned to *camerunensis* (greenish), five assigned to *wilsoni* (purplish) and one assigned to *nigeriae* (glossy green). Thus his series corresponds to *funerea* and *amauropteryx* in Central Africa with one extreme green variant. But in West Africa all these three forms apparently have brown primaries, so that any specific difference there cannot be linked to the colour of the primaries. Unfortunately he only collected a single female.

Apart from the question of three forms (*chalybeata*, *neumanni* and *ultramarina*) generally recognised but not examined by me, it would seem that all the other Indigo Birds can be treated as either two species (*funerea* and *amauropteryx*) or as a single polymorphic species. Whilst no categorical answer can be given as to which of these alternatives is correct, the evidence to date leans heavily in favour of the latter. An important question which may throw light upon this is whether the mouth pattern of juvenile Indigo Birds indicates the existence of more than one species, a point upon which I have traced no information. If in fact the variation in Indigo Birds is explicable as balanced polymorphism maintained by a balance of selective agencies which favour such diversity, it is doubtful whether any trinomial nomenclature should be applied to the species until the genetic mechanism involved is better understood, and any trinomials can be given some biological significance.

I am greatly indebted to C. W. Benson who examined this material with me, and to M. P. Stuart Irwin for his comments on this paper.

On the distribution of the races of the Paradise Flycatcher *Terpsiphone viridis* (Müller) in Southern Africa

by W. J. LAWSON

Received 15th May, 1961

Terpsiphone viridis (Müller) occurs throughout most of Africa, from the Cape Province almost to the Sahara and to Eritrea and south-west Arabia, with about ten races deserving recognition (*vide* Chapin 1953). It is a highly variable species with some of the races exhibiting phenomenal variation in coloration within the formal taxonomic unit.

In southern Africa this species is confined to the moister eastern and south-western portions, extending westwards in the north to Damaraland, but is absent from the arid interior. In southern Africa only two races are currently recognised, these being *T. v. granti* (Roberts) 1948: Swellendam, Cape Province, and *T. v. plumbeiceps* Reichenow 1898: Malanje, northern Angola (*vide* McLachlan & Liversidge 1957). Hall (1960) however recognises *T. v. violacea* (Grant & Mackworth-Praed) 1940: Fort Hill, northern Nyasaland, as an additional valid race within southern African sub-continental limits. A fine panel of skins, numbering some 262 specimens was assembled in the Durban Museum for the assessment of variation in the southern part of the range of *T. viridis*.

For the loan of material and other help I am grateful to the Directors of the Coryndon Museum, Nairobi, (through Mr. J. G. Williams), the Transvaal Museum (through Mr. O. P. M. Prozesky), the National Museum of Southern Rhodesia (through Mr. M. P. Stuart Irwin), and also to Mr. P. A. Clancey, Director of the Durban Museum, and Dr. James P. Chapin of the American Museum of Natural History for much valuable assistance.

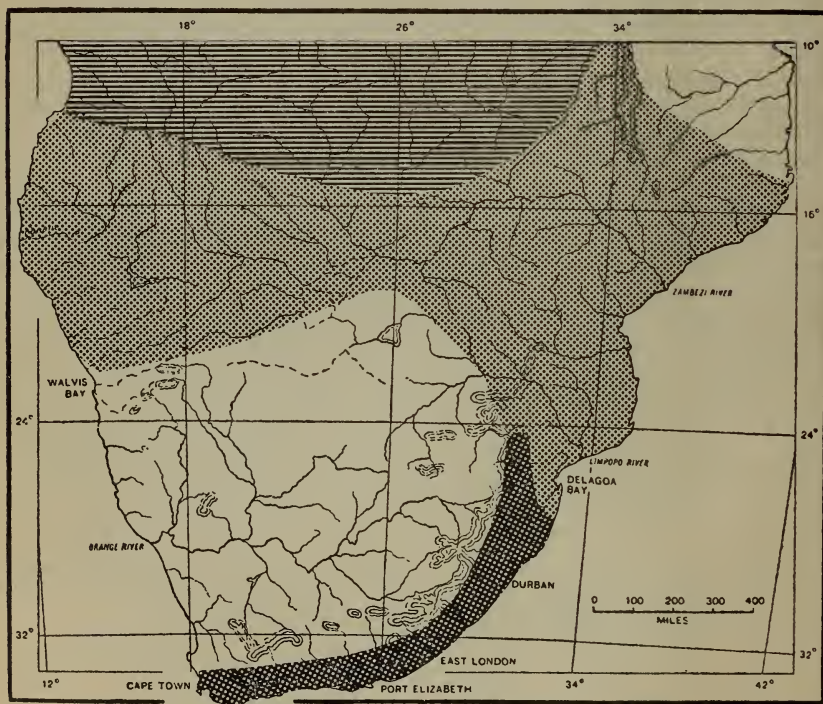
The south-western Cape Province, through the eastern Cape Province, Natal, Zululand, Swaziland and the eastern Transvaal constitutes the breeding range of the race *T. v. granti* (Roberts), its distribution corresponding fairly well with the area covered by the Cape Region, eastern tropical transitional and eastern temperate transitional of Poynton (1960). The male of this race is characterised by its metallic green head and throat, and in this respect differs from the more northerly races which usually have the head or throat blue-grey or blue-black, but not green. The southern races of *T. viridis* tend to be somewhat migratory during the non-breeding season (winter), and it is this migratory habit which has in the past confused workers, due to the fact that their ranges (in the non-breeding season) overlap, resulting in some of the races of *T. viridis* being even regarded as discrete species. Mackworth-Praed & Grant (1955) subdivide *T. viridis*, as here constituted, into no less than four distinct species (*T. viridis*, *T. suahelica*, *T. plumbeiceps* and *T. nigriceps*). *T. v. granti* migrates north in the non-breeding season, complete migration taking place in the south-western and southern Cape Province, but in the eastern Cape Province, Natal and Zululand specimens have been recorded during the winter. Whether these wintering birds are local or whether they have migrated there from further south is at present unknown. Specimens of *T. v. granti* have been examined from southern and northern Mocambique, Southern Rhodesia, southern Nyasaland and Northern Rhodesia, thus showing their wide range during the non-breeding season.

North of the range of *T. v. granti*, in southern and central Mocambique, northern and western Transvaal, Bechuanaland Protectorate, northern South West Africa and probably southern Angola, Southern Rhodesia, Nyasaland and eastern Northern Rhodesia east of the Muchinga Mtns., occurs a markedly different form of *T. viridis* for which the name *T. v. violacea* (Grant & Mackworth-Praed) is available. The male of this race is completely devoid of any metallic coloration on the throat, the throat being grey and the head colour blue. This blue colour of the head has a

slight metallic sheen, but is clearly not as metallic as in some of the races from further north in Africa. The under tail-coverts of *T. v. violacea* are white, as they are in *T. v. granti*. The intensity of the blue of the head appears to be somewhat variable, ranging from a decidedly greyish, non-metallic blue-grey, to a dark, almost black, slightly metallic blue. This variation, however, does not enjoy any definite geographical distribution and is best regarded as an unstable character.

Exactly where the northern breeding range limits of *T. v. granti* are in Zululand or extreme southern Mocambique is at present uncertain, but is presumably somewhere in the region of the Pongola (Maputo) River of northern Zululand, as well as in the north-eastern Transvaal. A breeding bird reported by Pinto & Lamm (1955) as having been obtained on the 5th February 1949 at Umbeluzi on its nest is certainly assignable to *T. v. violacea* on the basis of the blue coloration of the head, *T. v. granti* only occurring in southern Mocambique as a non-breeding (winter) visitor.

A single male specimen from the eastern Transvaal (Newington) has



Sketch-map showing the approximate ranges of the geographical races of the Paradise Flycatcher *Terpsiphone viridis* (Müller) occurring in southern Africa.

Heavy Ruled Area — *T. v. granti* (Roberts)

Light Dotted Area — *T. v. violacea* (Grant & Mackworth-Praed)

Heavy Dotted Area — *T. v. plumbeiceps* Reichenow

the grey throat of *T. v. violacea* but has the head a metallic green, indicating that it is probably an interracial hybrid between *T. v. granti* and *T. v. violacea*, as these two races meet in this region of the eastern Transvaal. In addition to this intergrade there are a number of specimens which have the green head of *T. v. granti* but which have an incipient metallic coloration on the grey throat. These specimens would also appear to be intergrades between *T. v. granti* and *T. v. violacea*, the hybrid characters expressing themselves in a different manner in this case. All these intergrade specimens with incipient throat coloration are wintering birds obtained north of their summer range in localities in Northern Rhodesia, Mocambique, southern Nyasaland, Southern Rhodesia and in the eastern Transvaal, so their exact breeding localities are unknown, but which are probably in the regions where the two races meet. There are odd Natal breeding birds which adumbrate the main characters of the contiguous *T. v. violacea*. *T. v. violacea* like *T. v. granti* is migratory, and it may be found that many of the records of *T. v. plumbeiceps* wintering in central Africa may in fact be referred to this race. (cf. Chapin *loc. cit.*), as specimens attributable to this race have been examined by me from the Uluguru Mtns. and the Luwipa River in Tanganyika Territory, Abercorn in Northern Rhodesia, and also from Pemba Island. The southern populations of *T. v. violacea* from the western and northern Transvaal are wholly migratory, and are not to be found during the winter months on their breeding grounds.

To the west and north-west of the range of *T. v. violacea* in Angola, Northern Rhodesia west of the Muchinga Mtns., and the south-eastern Congo occurs a race of *T. viridis* which resembles *T. v. violacea* very closely but which differs from that taxon by virtue of its buff under tail-coverts. The colour of the head is blue, with very little tendency for it to be metallic. For this race the name *T. v. plumbeiceps* Reichenow is available. Specimens of *T. v. plumbeiceps* have been examined from eastern Southern Rhodesia (Inyanga). All these austral races of *T. viridis* are migratory, so the presence of *T. v. plumbeiceps* in Southern Rhodesia is by no means unexpected. The races which occur in sub-continental southern Africa are therefore:

Terpsiphone viridis granti (Roberts)

Tchitrea granti Roberts, 1948, *Bull. B.O.C.*, p. 129: Duivenhoek River, Swellendam, Cape Province.

Muscipeta perspicillata Swainson, 1837, *Bds. W. Afr.*, ii, p. 59. (pre-occupied).

The male of this race is characterised by its glossy metallic green head and throat, on which character it is differentiated from the other races of *T. viridis*.

Measurements: 46 ♂♂ wing 78.0–85.5 (82.1) mm.

Material: 70 (Cape Province 11, Natal 11, Zululand 2, Swaziland 2, eastern Transvaal 5, Southern Rhodesia 3 (wintering), Mocambique 21 (wintering), Nyasaland 10 (wintering), Northern Rhodesia 5 (wintering).

Range: Ranges from the southern and south-western Cape Province through the eastern Cape Province, Natal Zululand, Swaziland and the eastern Transvaal. Intergrades north of its stated range with *T. v. violacea*.

Migrates during the non-breeding season as far north as Northern Rhodesia, southern Nyasaland and northern Mocambique.

Terpsiphone viridis violacea (Grant and Mackworth-Praed)

Tchitrea plumbeiceps violacea Grant and Mackworth-Praed, 1940, *Bull. B.O.C.*, 60, p. 93: Fort Hill, northern Nyasaland.

The male of this race is characterised by having a slightly metallic blue head, a grey, non-metallic, throat and white under tail-coverts.

Measurements: 107♂♂ wing 76.0–88.5 (83.1) mm.

Material: 112+ (Southern Rhodesia 28, Northern Rhodesia 38, Bechuanaland Protectorate 1, Mocambique 9, Tanganyika Territory 4, Nyasaland 9, Transvaal 20 and South West Africa 3.)

Range: Southern and central Mocambique, northern and western Transvaal, Bechuanaland Protectorate, northern South West Africa and probably southern Angola, Southern Rhodesia, Nyasaland and eastern Northern Rhodesia east of the Muchinga Mtns. Migrates north during the non-breeding season, i.e. the southern winter months.

Terpsiphone viridis plumbeiceps Reichenow

Terpsiphone plumbeiceps Reichenow 1898, in Werther, *Die Mittleren Hochländer des nördlichen Deutsch-Ost-Afrika*, p. 275: Malanje, northern Angola.

The male of this race is very similar to that of *T. v. violacea*, the only constant difference between the two being the rufous under tail-coverts of *T. v. plumbeiceps* as opposed to the white under tail-coverts of *T. v. violacea*. The blue head of *T. v. plumbeiceps* appears to be even less metallic than that of *T. v. violacea*.

Measurements: 10♂♂ wing 79.0–88.0 (83.8) mm.

Material: 12 (Northern Rhodesia 8, Angola 4).

Range: Angola, Northern Rhodesia west of the Muchinga Mtns. and the south-eastern Congo. Migrates, presumably northwards, during the non-breeding season.

The races of *T. viridis* north of the three dealt with here have been examined, but inadequate material prevents discussion on them here.

Bibliography:—

- Chapin, J. P., 1953, *Birds of the Belgian Congo*, pt. iii. *Bull. Am. Mus. Nat. Hist.*, 75A.
 Hall, B. P., 1960, The Faunistic Importance of the Scarp of Angola. *Ibis* 102, p. 420–442.
 Mackworth-Praed, C. W., & Grant, C. H. B., 1955, *Birds of Eastern and North Eastern Africa* vol. 2.
 McLachlan, G. R., & Liversidge, R., 1957, *Roberts Birds of South Africa*.
 Pinto, A. A. de R., & Lamm, D., 1955, Contribution to the Study of the Ornithology of Sul do Save (Mozambique), part ii. *Mem. Mus. Dr. Alvaro de Castro*, No. 3, p. 149–150.
 Poynton, J. C., 1960, Preliminary Note on the Zoogeography of the Amphibia in Southern Africa. *S. A. Journ. Sci.*, 56, (12), p. 307–312.

Some breeding and other records from Madagascar

by C. W. BENSON AND CHARLES R. S. PITMAN

Received 25th May, 1961

The field notes in this paper were made by C. W. B., assisted by his wife and M. Paul Griveaud, during a stay at Tananarive from 13th to 25th